

WHAT IS CLAIMED IS:

1. A method for forming a capacitor element having a capacitor insulation film made of strontium titanate, comprising the steps of:

depositing a strontium titanate film; and

heat treating said strontium titanate film at a temperature between

5 500 degrees C and 650 degrees C in an inert gas ambient.

2. The method according to claim 1, wherein said heat treating step crystallizes as-deposited said strontium titanate film which is an amorphous film.

3. The method according to claim 1, wherein said inert gas includes at least one of argon, helium and nitrogen as a main component thereof.

4. The method according to claim 1, wherein said heat treating step includes rapid thermal annealing conducted for a time interval between 15 seconds and five minutes.

5. A method for forming a capacitor element in an LSI, comprising the steps of:

forming a bottom electrode overlying a semiconductor substrate;

depositing a strontium titanate film on said bottom electrode;

5 forming a top electrode on said strontium titanate film; and

heat treating said strontium titanate film at a temperature between

500 degrees C and 650 degrees C in an inert gas ambient.

6. The method according to claim 5, wherein said bottom electrode includes a plurality of layers including a silicon layer and/or titanium nitride layer.

7. The method according to claim 5, wherein said heat treating step crystallizes as-deposited said strontium titanate film which is an amorphous film.

8. The method according to claim 5, wherein said inert gas includes at least one of argon, helium and nitrogen as a main component thereof.

9. The method according to claim 5, wherein said heat treating step includes rapid thermal annealing conducted for a time interval between 15 seconds and five minutes